

## **CLAIMS**

What is claimed is:

1. A method of changing the dynamic range of an original image to more closely match the dynamic range of the medium used for a reproduction, comprising:
  - 2 modifying the contrast differences between different areas of the original image as a function of the distance between the different areas.
2. The method of claim 1 where the contrast differences are preserved for large distances between the different areas and the contrast differences are enhanced for small distances between the different areas.
3. The method of claim 1 where the contrast differences are reduced for small distances between the different areas.
4. The method of claim 1 where very small contrast differences are substantially eliminated only for small distances between the different areas.
5. A method of changing the dynamic range of an original image to more closely match the dynamic range of the medium used for a reproduction, comprising:
  - 2 modifying the small contrast differences between different areas of the original image as a function of the distance between the different areas;
  - 4 limiting the maximum contrast differences between different areas of the original image, where the limit is a function of the distance between the different areas.

6. The method of claim 5 where the small contrast differences are preserved for large  
2 distances between the different areas and the small contrast differences are  
enhanced for small distances between the different areas.

7. The method of claim 5 where the small contrast differences are reduced for small  
2 distances between the different areas.

8. The method of claim 5 where very small contrast differences are eliminated only  
for small distances between the different areas.

9. The method of claim 5 where multiple look up tables are used to modify the small  
2 contrast differences and modify the maximum contrast differences in the original  
image as a function of the distance between the different areas.

10. The method of claim 9 where the slope of the look up tables are approximately  
2 one-to-one for large distances and the slope of the look up tables is larger than  
one-to-one for small distances between the different areas.

11. The method of claim 9 where the slope of the look up tables are less than one-to-  
2 one for small distances between the different areas.

12. The method of claim 9 where there is a dead band close to the origin in the look  
2 up table only for small distances between the different areas.

13. The method of claim 9 where the slope of the look up table is different for each  
2 different distance between the different areas of the original image.

14. A method of changing the dynamic range of an original image to more closely  
2 match the dynamic range of the medium used for a reproduction, comprising:  
4 modifying the small contrast differences between different areas of the  
original image as a function of the distance between the different areas;  
6 limiting the maximum contrast differences between different areas of  
the original image.

15. The method of claim 14 where the small contrast differences are preserved for  
2 large distances between the different areas and the small contrast differences are  
enhanced for small distances between the different areas.

16. The method of claim 14 where the small contrast differences are reduced for small  
2 distances between the different areas.

17. The method of claim 14 where very small contrast differences are eliminated only  
for small distances between the different areas.

18. The method of claim 14 where multiple look up tables are used to modify the  
2 small contrast differences while limiting the maximum contrast differences in the  
original image.

19. The method of claim 18 where the slope of the look up tables are approximately

2 one-to-one for large distances and the slope of the look up tables is larger than  
one-to-one for small distances between the different areas.

20. The method of claim 18 where the slope of the look up tables are less than one-to-

2 one for small distances between the different areas.

21. The method of claim 18 where there is a dead band close to the origin in the look

2 up table only for small distances between the different areas.

22. The method of claim 18 where the slope of the look up table is different for each

2 different distance between the different areas of the original image.

23. A method of changing the dynamic range of an original image to more closely

2 match the dynamic range of the medium used for a reproduction, comprising:

preserving small contrast differences between different areas of the

4 original image;

limiting the maximum contrast differences between different areas of

6 the original image, where the limit is a function of the distance between the

different areas.

24. A method of improving an apparatus that sequentially determines a comparative

2 measure of the radiance information for providing a new intermediate value of

each such measure in response to the product of a ratio function of the radiance

4 information associated with each of a first named segmental area and with each of

a second named segmental area and of a like measure previously determined for  
6 the second named segmental area, and determining a sequentially new value of  
each said measure in response to a selectively weighted averaging of the new  
8 intermediate value and a like measure previously determined for the first named  
segmental area, comprising:

10 modifying the small contrast differences of the ratio function as a  
function of the distance between the first named segmental area and the  
12 second named segmental area;

14 limiting the maximum contrast differences of the ratio function, where  
the limit is a function of the distance between the first named segmental area  
and the second named segmental area.

25. The method of claim 24 where the small contrast differences are preserved for  
2 large distances between the first and second named segmental areas and the small  
contrast differences are enhanced for small distances between the first and second  
4 named segmental areas.

26. The method of claim 24 where the small contrast differences are reduced for small  
2 distances between the first and second named segmental areas.

27. The method of claim 24 where very small contrast differences are eliminated only  
for small distances between the first and second named segmental areas.

28. The method of claim 24 where multiple look up tables are used to modify the  
2 small contrast differences and modify the maximum contrast differences in the  
original image as a function of the distance between the first and second named  
4 segmental areas.

29. The method of claim 28 where the slope of the look up tables are approximately  
2 one-to-one for large distances and the slope of the look up tables is larger than  
one-to-one for small distances between the first and second named segmental  
4 areas.

30. The method of claim 28 where the slope of the look up tables are less than one-to-  
2 one for small distances between the first and second named segmental areas.

31. The method of claim 28 where there is a dead band close to the origin in the look  
2 up table only for small distances between the first and second named segmental  
areas.

32. The method of claim 28 where the slope of the look up table is different for each  
2 different distance between the first and second named segmental areas.

33. A method of improving an apparatus that sequentially determines a comparative  
2 measure of the radiance information for providing a new intermediate value of  
each such measure in response to the product of a ratio function of the radiance  
4 information associated with each of a first named segmental area and with each of

a second named segmental area and of a like measure previously determined for  
6 the second named segmental area, and determining a sequentially new value of  
each said measure in response to a selectively weighted averaging of the new  
8 intermediate value and a like measure previously determined for the first named  
segmental area, comprising:

10 modifying the small contrast differences of the ratio function as a

function of the distance between the first named segmental area and the  
12 second named segmental area;

limiting the maximum contrast differences of the ratio function.

34. The method of claim 33 where the small contrast differences are preserved for

2 large distances between the first and second named segmental areas and the small  
contrast differences are enhanced for small distances between the first and second  
4 named segmental areas.

35. The method of claim 33 where the small contrast differences are reduced for small

2 distances between the first and second named segmental areas.

36. The method of claim 33 where very small contrast differences are eliminated only

for small distances between the first and second named segmental areas.

37. The method of claim 33 where multiple look up tables are used to modify the

2 small contrast differences and modify the maximum contrast differences in the  
original image as a function of the distance between the first and second named  
4 segmental areas.

38. The method of claim 37 where the slope of the look up tables are approximately

- 2      one-to-one for large distances and the slope of the look up tables is larger than
- one-to-one for small distances between the first and second named segmental
- 4      areas.

39. The method of claim 37 where the slope of the look up tables are less than one-to-

- 2      one for small distances between the first and second named segmental areas.

40. The method of claim 37 where there is a dead band close to the origin in the look

- 2      up table only for small distances between the first and second named segmental
- areas.

41. The method of claim 37 where the slope of the look up table is different for each

- 2      different distance between the first and second named segmental areas.